

AN EMPIRICAL TAXONOMY OF PURCHASING PRACTICES IN MANUFACTURING FIRMS IN DEVELOPING COUNTRIES

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Abstract

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Purchasing has been viewed in recent literature as a strategic contributor to achieve competitiveness. However, purchasing models in extant literature lack a comprehensive approach to define the variety of purchasing practices implemented in each purchasing strategic category. This paper provides a rich description and an empirical assessment of different practices in the purchasing construct. The study proposes a framework to allocate a variety of purchasing practices according to their strategic priorities that need to be achieved. An abductive approach was used. Based on reviewed literature and in-depth interviews with ten academic consultants and purchasing managers, a Likert scale questionnaire administered to purchasing executives representing manufacturing companies registered in the Amman Stock Exchange from 62 companies in 11 industries. The questionnaire explored purchasing practices related to cost (13 items), quality (10 items), and availability (4 items). The results indicate that purchasing practices can be grouped into three categories including cost practices, quality practices, and availability practices. There is a significant relationship between different purchasing practices and related strategic priorities. Purchasing practices can be utilized to achieve multiple strategic priorities. This paper provides some insights for future research in the area purchasing practices.

Keywords: Purchasing Processes, Purchasing Categories, Purchasing Practices, Factor Analysis, Strategic Intent

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1. INTRODUCTION

Firms need superior purchasing and supply management practices to guarantee sustainability and transparency in their activities. Purchasing practices support sustainability and minimize economic and brand reputation losses (Hallikas, Lintukangas, & Kähkönen, 2020; Xu et al., 2019), and provide significant support for diverse firm tasks, such as marketing and research and development (R&D) (Matthyssens, Bocconcelli, Pagano, & Quintens, 2016). Purchasing practices have acquired intensive attention from the perspective of alliances and supplier relationship management (Kähkönen, Lintukangas, & Hallikas, 2015), but more concentrated studies generating insights into the actual practices involved in these relations and the role of these practices are required (Carter, Kosmol, & Kaufmann, 2017). The pioneering work of Kraljic (1983) suggested four types of purchase categories and recommended a key purchasing strategy in each category. Subsequent researchers have suggested portfolio models (Bensaou, 1999; Olsen & Ellram, 1997) which were quite similar to the Kraljic matrix in essence (Luzzini, Caniato, Ronchi, & Spina, 2012).

However, such models have been criticized for being focused only on a limited set of contingencies. These models suggest only a limited set of purchasing strategies and are not distinctive enough about the variety of purchasing priorities implemented within the quadrants (Caniëls & Gelderman, 2007; Krause, Vachon, & Klassen, 2009; Nellore & Söderquist, 2000; Pagell, Wu, & Wasserman, 2010; Luzzini et al., 2012). For instance, Faes and Matthyssens (2009) found that the same purchasing priority was implemented in multiple quadrants of the Kraljic (1983) matrix. In addition, Gelderman and Van Weele (2005) reported that firms are already implementing multiple priorities within each quadrant. On the other hand, Ateş, van Raaij, and Wynstra (2018) concentrated on cost and innovation purchase category strategies and investigated the influence on purchasing performance of deviation from a perfect purchasing structure stated along three dimensions (centralization, formalization, and cross-functionality). Firms might have purchasing priorities at the overall function level, and a more micro level of analysis at the purchase category level (Luzzini et al., 2012; Terpend, Krause, & Dooley, 2011; Trautmann, Turkulainen, Hartmann, & Bals, 2009).

These findings reveal that there is a need for alternative and more comprehensive ways of defining purchase category priorities and practices (Hallikas & Lintukangas, 2016; Kwak, Seo, & Mason, 2018). One approach is to state priorities based on practices, which was traditionally the most commonly used approach in purchasing literature (Ateş et al., 2018; Birou, Fawcett, & Magnan, 1998; González-Benito, 2010; Treleven & Schweikhart, 1988). For instance, Treleven and Schweikhart (1988) distinguished between single versus multiple sourcing, and Birou et al. (1998) listed 43 purchasing practices, such as competitive bidding, supply base reduction, and early supplier involvement to define purchasing strategies. Another approach is a content focus, which describes priorities based on what the firms intend to achieve in the competitive market (Hamel & Prahalad, 1989).

Strategic intent is what the firm aims to accomplish in the competitive market relative to a set of contingencies, which may lead to different practices, processes, and impacts on performance (Kern, Moser, Sundaresan, & Hartmann, 2011; Rodríguez-Escobar & González-Benito, 2017). Strategic intent allows us to understand why certain practices are implemented (Kern et al., 2011). Surprisingly, this approach is rarely used in the purchasing strategy literature (González-Benito, 2010; Krause, Pagell, & Curkovic, 2001). In operations strategy literature, strategic intent measured using competitive priorities, which successfully predict differences in operations practices adopted by firms (Boyer & Lewis, 2002; Kathuria, 2000). As the operations and purchasing functions of firms are highly interlinked (Baier, Hartmann, & Moser, 2008; González-Benito, 2010; Hao, Li, Wu, & Sun, 2020; Narasimhan & Das, 2001), it has been suggested that the same competitive priorities (i.e., cost, quality, delivery, innovation) are also valid in the purchasing context (Krause et al., 2001; Pagell & Krause, 2002; Xu, Hao, Deng, & Wang, 2017; Xu, Hao, Yu, & Deng, 2018).

While there is a general lack of related research concerning developing countries (García-Rodríguez, Castilla-Gutiérrez, & Bustos-Flores, 2013), there have been some notable studies in developed economies. Karjalainen and Salmi (2013) examined the strategic priorities and tools that European and North American buyers use (at the category level) for direct purchases and how they differ. Watts, Kim, and Hahn (1995) argued that the first step before deciding on certain purchasing priorities is to define purchasing objectives, which must be cascaded from the business competitive priorities, consistent with operations objectives. Few studies did identify certain practices and tools that purchasing might implement to achieve intended strategic priorities (Sánchez-Rodríguez, Hemsworth, & Martínez-Lorente, 2004). Accordingly, it has become evident in current years that the importance of purchasing in the strategic planning function is becoming more and more significant and that it has positive consequences for purchasing process performance, and thus for corporate performance (Kim, Suresh, & Kocabasoglu-Hillmer, 2015).

This study addresses the identified literature gap concerning purchasing practices in developing countries by developing a taxonomy of purchasing operational practices based on intended strategic competitive priorities. Therefore, by grouping purchasing practices from the business strategic intent perspective, organizations can pinpoint the related purchasing practices that must be adopted and implemented to achieve their strategic intent. This study defines purchasing operational practices as those that only can be implemented or acted upon once suppliers are in place. Accordingly, we categorize purchasing practices into cost, quality, and availability. Thus, this paper describes an exploratory research effort to empirically analyze contemporary management practices in purchasing and their relationships with business strategic intent. Specifically, this paper focuses on the following objectives:

1. To develop and provide an overall empirical assessment of purchasing operational practices in purchasing function.

2. To empirically assess the relationships among purchasing practices and firm strategic intent.

The remainder of this paper is structured as follows. Section 2 reviews related literature, based on which the research framework and propositions are developed. Section 3 describes the methodology used, including the sample, data collection procedures, and variable measurements. Section 4 presents the results, while Section 5 discusses the main findings and conclusion discussed in Section 6 of the paper.

2. LITERATURE REVIEW

The purchasing process is one of the most critical issues in firms' supply chain management (SCM) (Cunha, Santos, Morabito, & Barbosa-Póvoa, 2018). It is the preliminary step in active manufacturing operations and production activities, sourcing raw materials, equipment, accessories, and auxiliary materials for manufacturing activities (García-Rodríguez et al., 2013). SCM is described as a strategic factor for enhancing organizational effectiveness and accomplishing organizational objectives, such as improved competitiveness, superior customer service, and increased profitability (Gunasekaran, Patel, & Tirtiroglu, 2001). In the increasingly competitive globalized economy, firms continue to struggle to effectively develop supply chain strategy to attain and maintain competitiveness. Most firms' supply chain strategy prioritizes cost reduction, quality improvement, and increased customer responsiveness (Govindan, Azevedo, Carvalho, & Cruz-Machado, 2015).

Competitive priorities refer to those purposes that manufacturing units need to achieve if the firms are to be capable to compete, attain the competencies established for the activity, and strengthen the competitive advantage of the firm. The strategic integration of competitive priorities in SCM can improve firm performance and sustainability (Díaz-Garrido, Martín-Peña, & Sánchez-López, 2011; Lin & Tseng, 2016). Firms adopt different sets of competitive priorities as objectives pursued in operations to gain competitive advantage (Boyer & Lewis, 2002; Hao et al., 2020; Miller & Roth, 1994; Sánchez-Rodríguez et al., 2004; Sen, Raj, & Kathuria, 2010). Particular combinations of competitive priorities constitute distinct operations strategies that affect practices, processes, and performance (Christiansen, Berry, Bruun, & Ward, 2003; Kathuria, 2000; Kern et al., 2011). A competitive priority for a purchased item is determined by the business's competitive priorities (Lee & Drake, 2010) in relation to business strategy; the core competitive priorities are cost, quality, time, and flexibility (Dangayach & Deshmukh, 2001; Hayes, Wheelwright, & Clark, 1988; Krajewski, Ritzman, & Malhotra, 2010; Xu et al., 2017; Xu et al., 2018). There are several purchasing related competencies described in the literature as competitive priorities (Kern et al., 2011; Krause et al., 2001; Miocevic, 2011; Sánchez-Rodríguez et al., 2004), but most concur on cost, quality, and availability

(Govindan et al., 2015; Xu et al., 2017; Xu et al., 2018). This is closely related to the idea of generic strategies from business strategy literature (Porter, 1980). Cost, as a competitive priority, corresponds to cost leadership, while the others (quality and availability) correspond to differentiation.

Low cost as a competitive priority (Carter & Narasimhan, 1995; Grodzicki & Skrzypek, 2020; Zsidisin, Ellram, & Ogden, 2003) interpreted as the firm's intention to be the lowest-cost producer in its industry. However, customers may evaluate the cost in different ways. Cost as a competitive priority aims to generate the highest added financial value and lowest costs through purchasing stages (Panoutsou, Singh, Christensen, & Pelkmans, 2020). Some may focus on just the purchase price, including delivery and, if applicable (e.g., in the case of equipment), installation. Other customers may additionally take into account the cost of acquisition, whereby they will favor a producer able to offer them not only a good price but also ways to bring down costs involved in determining specifications, ordering and paying for the purchase, and receiving and storing the goods. However, some customers may further wish to consider, in addition to the price and the cost of acquisition, the total cost of ownership. Thus, they will also include in their appraisal all of those costs incurred after a purchase has been made (i.e., operation, maintenance, and disposal costs) (David, Hwang, Pei, & Reneau, 2002; Narasimhan & Das, 2001; Zsidisin et al., 2003).

A firm, for whom quality is the competitive priority, would attempt to gain a competitive advantage based on the quality of its products (Sánchez-Rodríguez et al., 2004; Singh, 2013). Quality is aimed to enhance product and process performance and devotion to certification schemes and quality standards. The quality of the final product is significant for consumer trust and successful uptake of the market (Panoutsou et al., 2020). Customers perceive a product or service as having quality when it can fully meet their needs, and perhaps even exceed these (Garvin, 1987; Sánchez-Rodríguez et al., 2004; Singh, 2013). This feature responds to customers' questions such as "Does this product or service do or have everything that I need or want?". Quality is a multidimensional construct, including functionality, adaptability and flexibility, durability, environmental-friendliness, performance reliability, and image (Baier et al., 2008; Primo & Amundson, 2002; Sánchez-Rodríguez et al., 2004).

Finally, availability can also have different interpretations, but this paper chooses to define it as the ability to satisfy a customer's wish to have a product or service, in the quantity required, available when and where needed. The concept of availability comprises several dimensions, such as lead-time to delivery and continuity of supply (Hayes et al., 1988; Lin, & Tseng, 2016).

Table 1 summarizes the operational classifications of purchasing priorities developed by key studies in this field.

Table 1. Classification of purchasing priorities

<i>Study</i>	<i>Classification</i>
Kraljic (1983)	Four clusters of categories according to the "importance of purchasing" and the "complexity of the supply market".
Olsen and Ellram (1997)	The three-step method adopted to creating action plans according to the features of firm purchases and supplier interactions.
Wagner and Johnson (2004)	Portfolio perspective to analyze diverse sides of purchasing.
Carter and Hodgson (2006)	Methodology concerning transaction cost economics (TCE), reducing transaction costs to allocate resources according to the level of risk/reward.
Williamson (2008)	Investigated potential mutual exchanges between TCE and SCM.
Luzzini et al. (2012)	Concentrated on the categories recognized in the literature as "strategic" and "leverage".

3. RESEARCH METHODOLOGY

3.1. Study design

Based on the literature review explaining purchasing priorities, an abductive approach (Dubois & Gadde, 2002) was utilized in this study due to the empirical need for new categorization and methods to purchasing operational practices to support business strategic priorities in purchasing operations. In-depth interviews were held to develop a framework of purchasing operational practices that achieve strategic priorities for manufacturing firms in Jordan. The interviewees were ten academic consultants and purchasing managers associated with German Jordanian University, with the intention of identifying purchasing practices and justifications to achieve strategic intent. This study considers these interviewees as experts in the research area under study, accordingly, the size of ten in-depth

interviews was justified based on the Delphi technique of the size of the expert panel (Okoli & Pawlowski, 2004; Brill, Bishop, & Walker, 2006). The selection of the interviewee is based on three criteria: academic qualifications, experience in teaching purchasing, and scholarly publication in purchasing subjects. Due to the exploratory nature of the research, interviews were carried out on the University campus over a three-day period, where the participants were involved as speakers or visiting professors.

This validation study was appropriate to qualitatively explore meaning and causes (Silverman, 2006). All interviews were carried out in person by the researchers. Discussion notes have been sent back to the interviewees for verification to increase the reliability of the collected empirical data (Yin, 2017). Table 2 reports the interview findings of purchasing operational practices and their strategic intent from the interviewees' perspectives.

Table 2. Purchasing operational practices and strategic intent (Part 1)

<i>Purchasing practices</i>	<i>Description</i>	<i>Strategic intent</i>
Process re-engineering	Re-engineering effort should focus on the internal processes to minimize effort. Buying companies can adjust processes for compatibility with supplier processes.	Cost of acquisition
Process automation	Automate already simplified processes.	Cost of acquisition
Eliminate inspection	These items are standard and low-risk and should eliminate all inspection needs.	Cost of acquisition
Delegating call-off responsibility	Since these items are low-risk and low-value, purchasing function staff do not add much to the day-to-day purchasing operations. Responsibility should be delegated to end-users.	Cost of acquisition
Purchasing cards	Issued to nominated company personnel.	Cost of acquisition
E-commerce	Set up an account with a supplier that allows purchasing via supplier websites. Intermediary website availability. Internet product auctions. High transaction volume with single suppliers.	Cost of acquisition Purchase price
Consolidated billing	Reduce frequency of invoicing, and thus associated invoice processing and payment costs.	Cost of acquisition
Benchmarking against industry norms	Determines how arrangements offered by given suppliers compare with the best market supplier practices.	Purchase price
Value analysis/engineering	A structured methodology that can be used to find the optimal way of achieving a particular objective.	Cost of acquisition
Capture supplier expertise and innovation	Pool company and supplier knowledge and expertise.	Total cost of ownership
Quality planning	Details the processes and procedures to be used in design and manufacture, along with inspection and testing requirements if the quality is a risk factor.	Performance reliability Adaptability and flexibility Durability Image
Value analysis/engineering	A structured methodology that can be used to find the optimal way of achieving a particular objective.	Functionality Performance reliability Durability
Process re-engineering	The scope here should include both internal and external processes.	Functionality Performance reliability Durability

Table 2. Purchasing operational practices and strategic intent (Part 2)

<i>Purchasing practices</i>	<i>Description</i>	<i>Strategic intent</i>
Capture supplier expertise and innovation	Pool both company and supplier knowledge and expertise.	Functionality Performance reliability Durability Image
Quality assurance	This details the processes and procedures to be used in design and manufacture, along with inspection and testing requirements if the quality is a risk factor.	Performance reliability Adaptability and flexibility Durability Functionality Image
On-site supplier support and training	Developing supplier knowledge and capabilities	Performance reliability Adaptability and flexibility Durability Functionality
Supplier account manager	Providing a focal point to manage supplier relationships; fundamental to being a “good customer”.	Continuity of supply
Demand forecasting and early phased release of specification information	Can be used to slot requirements into supplier production schedules, thereby reducing the risk of delayed delivery, and providing a basis for more reliable contractual commitments to suppliers.	Lead-time to delivery
Business process re-engineering/e-commerce	Buying companies can adjust processes to better fit supplier processes.	Lead-time to delivery
Value analysis/engineering	A structured methodology that can be used to find the optimal way of achieving a particular objective.	Lead-time to delivery
On-site supplier support and training	Developing supplier knowledge and capabilities	Lead-time to delivery

Based on the aforementioned findings, a practical scheme can be devised, as outlined in Table 3. This table implies that purchasing practices can be analyzed using several priorities for realizing three broad strategic intentions: column-wise, row-wise, and cell-wise or (cellular). In the column-wise orientation, firms use multiple purchasing practices for achieving specific strategic intent. For example, firms desiring to improve quality performance may choose to use quality planning and assurance for

quality. In the row-wise orientation, firms can use specific purchasing practices to achieve multiple strategic intents. For instance, value analysis/value engineering is used for multiple purposes such as availability, quality improvement, and cost reduction. Finally, in the cellular approach, specific purchasing practices are geared towards achieving specific strategic dimensions. For example, firms seeking to improve overall availability performance can deploy a supplier account manager.

Table 3. Purchasing practice model

<i>Purchasing practices</i>	<i>Strategic intent</i>		
	<i>Cost</i>	<i>Quality</i>	<i>Availability</i>
Process re-engineering	X	X	X
Process automation	X		
Eliminate inspection	X		
Delegating call-off responsibility	X		
Purchasing cards	X		
E-commerce	X		X
Consolidated billing	X		
Benchmarking against industry norms	X	X	
Value analysis/value engineering	X	X	X
Capture supplier expertise and innovation	X	X	
Quality planning	X	X	
Quality assurance		X	
On-site supplier support and training		X	X
Supplier account manager			X
Demand forecasting and early phased release of specification information	X		X

The literature review suggests that the cellular approach has not been examined in a comprehensive manner in any single study. As there can be a huge number of possible cells, the cellular approach offers little help in terms of reducing the broad array of purchasing practices into a manageable set. Thus, the question arises of whether these purchasing practices are organized in a manner driven by the practice itself (i.e., row-wise), or by the strategic intent behind the purchasing practices (i.e., column-wise). It may be noted that this proposition, as illustrated in Table 3, does not specify item-to-factor(s) correspondence, which would have been necessary for the confirmatory approach. It is premature to conduct confirmatory

analysis, and accordingly, we have termed our expectations as *propositions* as opposed to *hypotheses*.

Our research focus is on whether the split will be row- or column-wise, as per Table 3. We suggest that purchasing practices are best grouped around strategic intent. This reflects the pervasive theme in the strategic management literature that “strategy precedes structure” (Miller, 1987; Mintzberg, 1993). If we accept the classic ordering of “strategy and then structure”, it follows that purchasing practices, seen as the structuring of purchasing, should factor-analyze along strategic underlying dimensions, rather than along dimensions that describe the type of purchasing initiative.

Thus:

Proposition 1: Purchasing practices can be grouped according to the strategic intent they are meant to support.

Proposition 2: There are positive relationships between individual purchasing practices and business strategic intent.

The above propositions are premised on the suggestion that purchasing practices can be grouped into cost, quality, and availability. These should be interpreted as “purchasing practices to support cost reduction intent”, “purchasing practices to support quality strategic intent”, and so on.

Furthermore, we propose that these underlying factors are also related to strategic intent. In particular, we wish to determine if purchasing-cost practices (for example) are related to the strategic intent of cost.

From the literature review above, it can be observed that: 1) purchasing practices can exhibit a significant, positive relationship with more than one dimension of manufacturing performance; and 2) purchasing practices are usually discussed individually. One goal in this study is to determine sets or “bundles” of purchasing initiatives (from factor analysis related to *Proposition 2*).

To achieve the study objectives and test the propositions, a Likert-type questionnaire was developed based on the interview findings and was administered to purchasing executives representing manufacturing companies registered in the Amman Stock Exchange (ASE) from 62 manufacturing companies in 11 industries. The questionnaire explored purchasing practices related to cost (13 items), quality (10 items), and availability (4 items).

The items used to measure the practices were derived from the in-depth interview findings. Respondents were asked to indicate the extent to which each of the listed practices was used by the firm to support its overall strategic intent. If a practice was not used by a firm, the respondent was asked to circle “N/A” (not applicable). All items measured on a five-point Likert scale from 1 = “Extremely low use of practice” to 5 = “Extremely high use of practice”. All items used in the questionnaire are reported in Appendix. The practices used to establish the clusters were cost, quality, and availability. Cost practices were measured using a 13-item scale assessing the purchasing department’s approach to the cost objective through the existence of formal purchasing practices. The quality practices were measured using a 10-item scale, exploring the extent of implementing formal purchasing practices in

the purchasing department to support the quality objective. Finally, the availability practices were measured using a four-item scale to assess the extent of utilizing formal purchasing practices.

A two-stage clustering method, combining hierarchical clustering with non-hierarchical clustering (Punj & Stewart, 1983), was used to analyze the survey data, and prioritize the practices. Ward’s minimum-variance method and the K-mean algorithm (Ward, 1963) are presented, then the study propositions are investigated.

3.2. Sample characteristics

This empirical study is based on data gathered from purchasing executives representing industrial companies registered on the ASE in Jordan. A survey methodology through a structured questionnaire was used to collect data pertaining to the research objective. The unit of analysis for this study was the firm. The survey questionnaire was directed to purchasing executives in each firm. This survey was directed to all of the manufacturing industrial companies listed in ASE in 2019, totaling 72 firms from the pharmaceutical, chemical, paper and cardboard, food and beverages, tobacco, mining, engineering and construction, electrical, and textiles and clothing industries. Hence, the sample surveys the whole population of manufacturing industrial companies listed in the stock market, which justifies the relatively small number of the surveyed companies. The manufacturing sector in Jordan was particularly relevant to this study as it is considered the largest export sector in the Jordanian economy, and the manufacturing sector is particularly important for developing countries in general. From a purchasing perspective, this means that purchasing managers in these companies deal with international suppliers, which is of critical importance given that Jordan has limited natural resources and raw materials. After initial contact with targeted companies, the data collection process was conducted between September and October 2016. As a result, 62 companies from 11 different industries participated in the study, as detailed in Table 4. These companies have been in business for over 10 years, publically owned, and registered in Amman Stock Exchange. The questionnaire was administered in-person to validate the accuracy of the respondents. As described previously, respondents were asked to provide a five-point rating of the firm’s relative strategic intent importance for the presented items, where 1 represented “least important”, and 5 represented “extremely important”.

Table 4. Participating companies’ characteristics

<i>Industry</i>	<i>No. of companies listed in ASE</i>	<i>No. of participating companies</i>
Chemicals	10	8
Electrical	5	4
Engineering & construction	9	9
Food & beverage	12	11
Glass and ceramics	2	1
Mining	16	13
Paper & cardboard	3	3
Pharmaceutical	6	5
Printing & packaging	1	1
Textiles & clothing	6	6
Tobacco	2	1

A single respondent was carefully selected from each industrial company based on their being considered knowledgeable about the purchasing and supply process. The population included purchasing executives, with titles such as director of purchasing and purchasing manager. These high-ranking managerial positions were chosen as the respondent group because of their knowledge of the subject matter in the survey instrument, especially regarding purchasing practices. Each respondent was asked to respond to the survey part related to the strategic intent of their firm (see Appendix). This was necessary to increase the reliability of the data gathered (DeVellis, 2009; Phillips, 1981). Three aspects of strategic intent were measured in this study: cost reduction, quality improvement, and availability. Tests for non-response bias were carried out by comparing early respondents (responses received within the first two weeks) and later respondents (responses received within the third week or later) (Armstrong & Overton, 1977). A t-test of difference was conducted on firm size (employees and sales), and mean responses to each variable. No statistically significant differences were identified at $p < 0.05$.

4. RESULTS

4.1. Dimensions of purchasing practices (Proposition 1)

The following subsections report the findings and the study propositions. As stated earlier with regard to the conceptual model presented in Table 3, the literature is not clear as to whether the deployment of purchasing practices is a competitive, holistic priority (i.e., whether purchasing practices are grouped according to the strategic priorities they are meant to support). Factor analysis was performed to test the validity of measures used in measuring the practices. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.8 (above the recommended level of 0.6), and Bartlett's test of sphericity is significant ($p < 0.01$). The 27 purchasing items were subject to principal components factor analysis with varimax rotation. The factor analysis revealed a stable three-factor solution, with each of the factors having eigenvalues exceeding one. The cumulative percentage of total variance explained due to these three factors was 78.6%. Table 5 presents the results of the factor analysis, showing that there was a high degree of convergence within each factor (the lowest

factor loading within a factor was 0.620). In addition, there was a high degree of divergence across factors, as indicated by the lack of cross-loading of any item on more than one factor. The nature of the items that load on each factor suggests three factors: purchasing-cost practices, purchasing-quality practices, and purchasing-availability practices. Therefore, *Proposition 1* is supported.

The items forming each of the purchasing factors were then tested for internal consistency using Cronbach's alpha (Nunnally, 1975). Reliability refers to the ability to yield consistent results (Nunnally, 1975). The reliability analysis was conducted by calculating the Cronbach's alpha for each scale. Table 5 shows that the scales for each of the purchasing factors were internally consistent and the constructs were reliable, with Cronbach's alpha values ranging from 0.653 to 0.904. Overall, the analyses indicated that the constructs were one-dimensional and reliable, and thus the factor-score items were taken as the units for further analyses for testing *Proposition 2*.

No reliability and construct validity tests were performed for the overall measures of competitive priorities (cost, quality, and availability). In this case, the competitive constructs were defined as the sum of their indicators, which technically makes it a formative scale, as opposed to the more common reflective scale type, where the items are viewed as being caused by an underlying construct (Bagozzi & Fornell, 1982).

4.2. Purchasing factors and strategic priorities (Proposition 2)

The correlations and p-values of the three purchasing factors with the three strategic priority items are presented in Table 6. For cost, quality, and availability, each purchasing factor was consistently related to the priority on its respective strategic dimension. For example, purchasing-cost was significantly related to the strategic priority of cost ($p = 0.000$). Two purchasing factors were related to multiple strategic priorities. The purchasing-cost factor was a significant predictor of availability and cost priority. This means that some purchasing practices can be utilized to achieve multiple strategic priorities, as suggested in Table 6. Based on the results of correlations, we can conclude that, overall, *Proposition 2* is supported.

Table 5. Means, standard deviations, Cronbach's alpha, and rotated factor loadings for the three purchasing factors

Construct/item	Mean	SD	Cronbach's alpha	Factor 1 (Cost)	Factor 2 (Quality)	Factor 3 (Availability)
<i>CP: Cost practices</i>	3.2742		0.904			
CP1	3.9348	1.23652	0.845	0.756	0.109	-0.006
CP2	3.4783	1.47180	0.755	0.851	0.067	0.021
CP3	3.5652	1.42442	0.653	0.693	-0.040	0.015
CP4	3.2609	1.65240	0.881	0.647	0.037	0.213
CP5	2.3913	1.55604	0.891	0.648	0.055	0.001
CP6	2.5217	1.36201	0.733	0.883	0.0143	-0.052
CP7	2.5652	1.48552	0.866	0.687	0.026	0.102
CP8	2.4783	1.58800	0.821	0.651	0.132	0.154
CP9	2.6304	1.65138	0.666	0.759	0.003	0.204
CP10	2.9130	1.58921	0.823	0.634	0.249	0.008
CP11	4.2609	1.21901	0.799	0.749	0.079	-0.069
CP12	3.5652	1.51514	0.855	0.845	0.009	0.091
CP13	3.7826	1.47442	0.869	0.768	0.188	0.270
<i>QP: Quality practices</i>	3.7891		0.888		0.774	
QP1	4.1522	1.28179	0.721	-0.009	0.824	-0.015
QP2	3.9348	1.27196	0.801	-0.058	0.835	0.206
QP3	4.0000	1.19257	0.811	0.188	0.852	-0.085
QP4	3.7174	1.40891	0.799	0.237	0.666	0.139
QP5	3.7826	1.34846	0.761	0.091	0.648	0.178
QP6	3.6304	1.40410	0.777	0.014	0.722	0.002
QP7	3.5870	1.42324	0.769	0.009	0.620	-0.023
QP8	3.9783	1.34146	0.859	0.238	0.711	0.273
QP9	3.9348	1.35650	0.719	-0.101	0.839	0.049
QP10	3.1739	1.53918	0.694	-0.002	0.701	0.209
<i>AP: Availability practices</i>	3.7663		0.866			
AP1	3.9565	1.33261	0.728	0.257	0.086	0.861
AP2	3.4348	1.52974	0.729	0.006	0.077	0.798
AP3	3.8913	1.46406	0.806	0.093	-0.098	0.823
AP4	3.7826	1.38103	0.801	-0.087	-0.018	0.715
Eigenvalue				5.822	4.121	2.431
Percentage of variance explained				34.0%	25.5%	19.1%
Cumulative percentage of total variance explained				34.0%	59.5%	78.6%

Table 6. Correlations of purchasing factors and strategic priorities

Variable	Correlation	Purchasing factors		
		Purchasing-cost	Purchasing-quality	Purchasing-availability
Cost-priority	$r =$	0.678	0.055	0.561
	$p =$	0.000	0.765	0.051
Quality-priority	$r =$	0.221	0.844	0.005
	$p =$	0.102	0.000	0.871
Availability-priority	$r =$	0.522	0.023	0.425
	$p =$	0.061	0.867	0.033

5. DISCUSSION

Purchasing models in extant literature appeared to lack a comprehensive approach to defining the variety of purchasing practices implemented in each purchasing strategic category. The aim of this paper was to develop and provide an overall empirical assessment of the different practices in the purchasing construct. A conceptual model was proposed and tested to achieve the objective. This study adds to the emerging literature at the interface of purchasing and business strategy and it is one of the first studies to develop a comprehensive conceptualization of purchasing practices, particularly for a developing-country context. Through a detailed review of the literature, constructs of practices in purchasing were identified - cost, quality, and availability - and measurement instruments were developed. The results, scale refinement, and validation procedures indicated that the scales used were valid and reliable (DeVellis, 2009).

From a managerial perspective, the developed instrument provides purchasing managers with the main constituents of practices in the purchasing

system, as well as with the specific initiatives to be implemented in each major action program. For example, a business strategy focusing on cost can be achieved by setting cost as the most important goal at the purchasing functional level. Consequently, *Proposition 1* can be used as a guide for purchasing managers to adopt a variety of purchasing-cost practices in order to attain the goal. The findings suggest that there is a significant relationship between the different purchasing practices and their related strategic priorities. Hence, we conclude that some purchasing practices can be utilized to achieve multiple strategic priorities. For instance, the results showed that purchasing-cost practices could be utilized to achieve multiple strategic priorities, affirming *Proposition 2*.

The significance of this research is that it provides insights to purchasing executives so that they can better understand what kind of practices need to be adopted in order to support the firm's overall business strategy. Confronting today's severe competition in the marketplace requires purchasing and supply managers to regularly evaluate their operational practices in a way that fits with the target strategic priorities (Kern et al., 2011).

Firms should consider appropriate categories for defining their purchasing category strategies. Hence, our study contributes to the theoretical debate on purchasing and strategy and provides a rich and descriptive explanation, at the operational level,

of how purchasing managers should employ the different purchasing practices for improved competitive advantage.

Table 7 shows the concluded results in relation to previous literature.

Table 7. Comparison of results with previous studies

<i>Study</i>	<i>Consistent</i>	<i>Different</i>
Bensaou (1999)		X
Boyer and Lewis (2002)	X	
Sánchez-Rodríguez et al. (2004)	X	
Gelderman and Van Weele (2005)		X
Kern et al. (2011)	X	
Luzzini et al. (2012)		X
Kim et al. (2015)	X	
Rodríguez-Escobar and González-Benito (2017)	X	
Ateş et al. (2018)	X	
Xu et al. (2018)	X	

6. CONCLUSION

The results on purchasing practices are grouped into three categories pertaining to cost practices, quality practices, and availability practices. The results suggest that there is a significant relationship between the different purchasing practices and their related strategic priorities and that purchasing practices can be utilized to achieve multiple strategic priorities.

As with all other research, this research suffers from certain limitations. The population consisted of firms from one country, although it included the whole list of industrial companies listed in the ASE in 2019. Another limitation of this study is that data were gathered only from manufacturing firms; this means that the results might be generalizable to the population of firms who have similar characteristics to the Jordanian industrial

companies, particularly given the broad sweep of manufacturing industries that were purposively sampled, but more targeted industrial sectors can be explored by future research. An extension of this research could include testing the proposed conceptual model from firms in other countries. Capturing the perspectives of different populations and settings may lead to different conclusions relative to particular study contexts (DeVellis, 2009; Miocevic, 2011). Hence, future studies may use the proposed model in other countries or contexts to enhance the generalizability of the findings. Furthermore, we recommend that future researchers conduct industry-focused studies, preferably through qualitative methods, to capture the concealed behavior and practices of purchasing managers in different contexts, and from the perspective of other supply chain members.

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APPENDIX. QUESTIONNAIRE SAMPLE

Part I: On a scale of 1 = “Extremely low use of initiative”, to 5 = “Extremely high use of initiative”, indicate your firm’s position on each of the following practices.

<i>Item description</i>	<i>N/A</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Cost practices (CP)						
CP1: The purchasing department is actively involved in evaluating and redesigning its own processes in order to reduce costs and efforts.						
CP2: The purchasing department is actively involved in redesigning its own processes in order to better fit with supplier processes.						
CP3: Your purchased IT system has a search facility to help identify items you wish to purchase (e.g., based on keywords).						
CP4: Your purchased IT system has an automatic filling of items on the purchase order. For example, entering the required item number might automatically identify the supplier, and enter the supplier’s details on the order.						
CP5: Your purchased IT system has automatic order issuing by fax or e-mail. Once the order is approved, the computer should be able to send it to the supplier electronically, without the need to print off a hardcopy and send it by post.						
CP6: For non-high value, low-risk purchased items, your purchasing procedures are not to inspect purchased item.						
CP7: For certain items, once a contract is signed, appropriately authorized end users identify items they need from the contract and communicate their requirements directly to the suppliers, without needing to seek approval from purchasing or others.						
CP8: Your organization nominates staff within your company (these could be both buyers and end-users) to be issued purchasing cards. These can have an upper limit on individual transactions and on total expenditure per month.						
CP9: When purchasing certain items, your purchasing procedures allow you to set up an account with a supplier that allows you to make purchases via the supplier’s website.						
CP10: Your supplier can issue consolidated billing in order to reduce the frequency of invoices, reducing the amount of time and effort involved in processing these invoices and making payments.						
CP11: Before making a purchase, you use benchmarking data to compare prices.						
CP12: The purchasing department is actively involved in value analysis/engineering processes with suppliers, to achieve savings from design optimizations.						
CP13: Your organization agrees with suppliers to work jointly on total cost reduction initiatives.						
Quality practices (QP)						
QP1: Purchasing management is actively involved in activities to promote quality in the company.						
QP2: Purchasing management communicates to purchasing personnel that quality is the most important goal.						
QP3: Performance evaluation for purchasing management is based on quality performance (materials purchased defects rate, and degree of internal customer satisfaction).						
QP4: Quality is the most important criterion in the selection and evaluation of suppliers.						
QP5: Purchasing personnel participates with quality and/or production personnel in determining materials specifications.						
QP6: Purchasing personnel collaborates with production/manufacturing personnel in solving production problems.						
QP7: Purchasing is involved in the company’s new product development process.						
QP8: We visit suppliers’ factories to assess their facilities; suppliers are recognized and rewarded for materials quality improvement.						
QP9: We collect information (data) about quality performance (supplier’s rejection rate, and degree of internal customer satisfaction).						
QP10: Suppliers participate in the company’s new product development process.						
Availability (AP)						
AP1: Our demand forecasts are inserted as slot requirements into the supplier’s production schedule, thereby reducing the risk of delayed delivery, providing a basis for making more reliable contractual commitments with suppliers.						
AP2: You assign a supplier account manager in order to provide a focal point in your company to manage supplier relationships.						
AP3: The purchasing department is actively involved in evaluating and redesigning its own processes to adjust its processes to fit in better with the supplier’s processes (reduced lead-time to delivery).						
AP4: You pool the knowledge and expertise of your company and suppliers in order to reduce lead-time to delivery.						

Part II: The following statements help us understand your business strategy. Please indicate by ticking the appropriate box the extent to which you agree with each statement as best reflecting your company's business strategy in the past two years, one a scale from 1 - "least important" to 5 - "extremely important".

A. Cost:

I. We attempt to be ahead of our competitors by cheaper pricing of our products.

1

2

3

4

5

II. We constantly drive to improve the efficiency of our processes.

1

2

3

4

5

B. Quality:

I. We attempt to be ahead of our competitors by quality products rather than price.

1

2

3

4

5

II. We attempt to be ahead of our competitors by providing quality products to our customers.

1

2

3

4

5

C. Availability:

I. We attempt to be ahead of our competitors by satisfying our customers in the right quantity at the right time.

1

2

3

4

5

II. We attempt to be ahead of our competitors by delivering our products quicker to our customers.

1

2

3

4

5